

Name \_\_\_\_\_

Date \_\_\_\_\_

Introduction to Related Rates

1. Given  $y = 4x^3 - 3x^2 - 9x + 1$ , find  $\frac{dy}{dx}$
2. Given  $y = 4w^3 - 3w^2 - 9w + 1$ , find  $\frac{dy}{dw}$
3. Given  $v = 4m^3 - 3m^2 - 9m + 1$ , find  $\frac{dv}{dm}$
4. Given  $y = 4x^3 - 3x^2 - 9x + 1$ , find  $\frac{dy}{dt}$
5. Given  $p = 2L + 2W$ , find  $\frac{dp}{dt}$
6. Given  $A = \pi r^2$ , find  $\frac{dA}{dt}$
7. Given  $V = \frac{4}{3}\pi r^3$ , find  $\frac{dV}{dt}$
8. Given  $V = \pi r^2 h$ , find  $\frac{dV}{dt}$
9. Given  $V = \frac{1}{3}\pi r^2 h$ , find  $\frac{dV}{dt}$
10. Given  $c^2 = a^2 + b^2$ , find  $\frac{dc}{dt}$